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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,505	01/31/2002	Satoshi Haneda	56232.17 [4993]	6228

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EXAMINER

RODEE, CHRISTOPHER D

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 01/29/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/066,505

Applicant(s)

HANEDA ET AL.

Examiner

Christopher D RoDee

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-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Claim Objections

Claims 6 and 29 are objected to because of the following informalities: Line 4 in claims 6 and 29 appears to be missing the article "a" before "condition". Appropriate correction is required.

spec. p. 41, 1-12 ✓
Claim 22 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 22 is improper because it is dependent on itself, thus failing to further limit the subject matter of a previous claim. If this claim were intended to be dependent on claim 20 or 21 no carrier particle would be permitted for a one-component developer. The claim would fail to further limit either of these previous claims.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

~ Claims 1-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The instant claims are indefinite because it is unclear what is included or excluded within the scope of a "fixing device". It is unclear if this is an apparatus, in which case the claim fails to

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define any structure of the apparatus, or if this requires only a component that could fix toner (e.g., a roller or IR lamp). Clarification is required.

Claim 19 is indefinite because it is unclear what "an adhesion" refers to with respect to the developing or transferring step. It appears that the toner is not adhered in either of the developing or transferring steps but could be in the fixing step. Clarification is requested.

Claim 22 is indefinite because it is dependent upon itself and, thus, unclear as to the process being described.

Claim Rejections - 35 USC §§ 102 & 103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Yamashiro *et al.* in US Patent 5,328,795.

Yamashiro discloses a process of forming toner images using a toner particle having a flattened spheroidal shape. Yamashiro discusses the typical method of using toner particles on plain paper. As discussed by Yamashiro in column 2, beginning at line 8,

“In an electrostatic photography using plain paper as a substrate on which toner images are fixed, an latent image is formed on the surface of an photoconductive body to which electrostatic charges have been given, the latent image is developed by the toner to a toner image, and the toner image is transferred onto a substrate, and then the toner image is fixed thereon, to provide a copy.”

The reference then discusses the need to clean toner particles from the surface of the photoconductive body (i.e., an image forming body) using a cleaning blade or other well known device (col. 2, l. 15-32). The shape of the reference's toner is specifically designed in the reference so that toner cleaning is more effective (col. 3, l. 25-28).

The reference discloses a process of making the toner by a suspension polymerization process where liquid monomer, colorant, and other components are placed in water and polymerized followed by treatment of the particles in a wet agitation mill within 10 °C of the toner's binder resin's Tg to deform the particles into the desired shape (col. 4, l. 39 - col. 5, l. 9; col. 12, l. 3-65). The resulting toner has an average diameter of from 3 to 30 μm , a thickness of from 1 to 15 μm , and a flatness of not more than 0.5 when in a disk shape. Alternatively, toner has a major axis diameter of from 3 to 30 μm , a minor axis diameter of 1 to 25 μm , and a flatness of not more than 0.5 (col. 12, l. 66 - col. 13, l. 3). Alternative processes of making the toner include suspension polymerization followed by mechanical pressing, which deforms the toner and fixes triboelectric or electroconductive particles on the surface of the toner particles (col. 14, l. 33 - col. 16, l. 47). This process is carried out at temperatures below the toner resin's Tg. The toners' particle size distributions are presented in Table 2 (col. 23, bottom).

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The toners are used in an electrostatic copying machine to form 10,000 images (col. 23, l. 35 - col. 24, l. 5). It appears that this device inherently has a fixing device because it is disclosed as a commercially available copying machine and the machine could not form copies (i.e., toner images on paper) without a fixing device (e.g., pressure roller, heated roller, IR lamp, etc.). Also note column 24, lines 6-23, where the degree of fixability of the toner on paper is measured.

Exemplified toners are present in Part A Examples 1 and 2. The toner of Example 1 is disk-shaped with an average diameter of 13 μm (r_2 and r_1 with respect to the instant claims) and an average thickness of 6 μm (d with respect to the instant claims). This toner thus has r_2/r_1 of 1, and d/r_2 of 0.46. The toner of Example 2 is oval shaped with a major axis (r_1) of 15 μm , a minor axis (r_2) of 10 μm , and d of 5 μm . This toner thus has r_2/r_1 of 0.67, and d/r_2 of 0.50. These toners are formed using a wet agitation mill, as described above.

The toners of the invention can be used as single component developer or as two-component developers when combined with a carrier, such as iron powder or a ferrite powder (col. 21, l. 55-63; col. 23, l. 25-34).

Claims 1, 2, 17, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Higashimura *et al.* in US Patent 4,948,692.

Higashimura discloses an imaging process (Embodiment 4, col. 25, l. 40 *et seq.*) with reference to the device of Figure 1A (col. 6, l. 29 - col. 7, l. 24), where an image forming member **4** is exposed to light **12** from an exposer **11** to give an electrostatic latent image under bias voltage **13**. The image is developed by toner **7** from a developing device. The toner image travels on the image-forming member **4** to a transfer position. The transferred image is then fixed at fixing device **21**. As seen in Figure 31, the flattened toner resides in a stable position

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315 and possibly in an unstable position **316** (col. 26, l. 44-58). All toner will take the stable position **315** at transfer so that each of the flattened toner particles is attached onto the image forming body and the transfer material in such a manner that a surface perpendicular to a direction of the thickness of each of the flattened toner particles comes into contact with a surface of the image forming body and a surface of the transfer material. Additionally, movement of the flattened toner particles in the transferring step is conducted while the surface perpendicular to the direction of the thickness of each of the flattened toner particles faces the surface of the image forming body and the surface of the transfer material.

The toner particles are produced by dispersing conductive thermoplastic resin particles in a heat resistant solution maintained at a temperature greater than the melting point of the thermoplastic resin. The thermoplastic resin particles are passed through a space smaller than the particle diameter of the resin particle in order to elongate the particles and are quenched immediately after passing through the space. The changed shape of the thermoplastic resin is fixed by quenching to yield flat particles. (col. 27, l. 14-40). Example 4-1 produces a flattened toner according to the invention having a disk shape. These toners have diameters of from about 10 to 18 μm (r_2 and r_1 with respect to the instant claims) and a thickness of about 5 μm (d with respect to the instant claims). This toner thus has r_2/r_1 of 1, and d/r_2 of 0.28 to 0.50. Given that all particles are between about 10 and 18 μm , the expression in instant claims 27 and 28 is met. Specifically, if the average size of the particles was 10 μm then the ratio $d_0/d_0(M)$ would range from 1 to 1.8. If the average size of the particle was 18 μm then the ratio $d_0/d_0(M)$ would range from 0.55 to 1.0. Thus, 100% of the particles or nearly 100% would be within the claimed range for of 0.5 to 2 for $d_0/d_0(M)$.

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Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashiro *et al.* in US Patent 5,328,795 in view of *Organic Photoreceptors for Imaging Systems* to Borsenberger *et al.*, pp. 6-17.

Yamashiro was described above. This rejection is applied to claim 1 in the event the reference does not disclose the fixing device as required. The supporting Borsenberger reference discloses the conventional steps of electrostatic imaging, which include steps of charging, exposure, development, transfer, fixing, and cleaning. Fixing devices such as fusing apparatus 5 in Figure 5 or the combination of pressure and fuser rollers in Figure 7. See the discussion on pp. 15-16 for specific details to the well known fixing process and devices used.

The rejection is also applied to claim 2 based on the specific disclosure in the Examples noted above and in combination with the general disclosure in col. 12, l. 66 - col. 13, l. 3 where the reference states that toner has an average diameter of from 3 to 30 μm , a thickness of from 1 to 15 μm , and a flatness of not more than 0.5 when in a disk shape. Alternatively, toner has a major axis diameter of from 3 to 30 μm , a minor axis diameter of 1 to 25 μm , and a flatness of not more than 0.5 to give an oval toner.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a fixing device, such as those disclosed by Borsenberger, to fix the toner images produced in Yamashiro because Yamashiro teaches fixing of toner images and Borsenberger discloses the conventional devices in the art that provide this function. The artisan would have been expected to use the well known fixing devices in the art when this feature is desired by the primary reference.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the characteristics of the oval or disk shaped toner exemplified in Yamashiro, such as reducing the thickness of the toner to 4 μm , because the reference

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teaches that the thickness can be from 1 to 15 μm and that the flatness should not be more than 0.5. The artisan would have been expected to use the optimize these characteristics to give the cleanability features desired by the reference.

Claims 27-30 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Higashimura *et al.* in US Patent 4,948,692.

Higashimura was described above. The specific product-by-process limitation in claims 27-30 not specified by the reference but because the reference produces a particle whose shape characteristics meet those required noting D , r_2 , r_1 , r_2/r_1 and d/r_2 , there is sufficient reason to believe that the same product is produced in the reference as is claimed. See *In re Thorpe*, 227 USPQ 964.

The reference clearly teaches that the toner particles should be in the stable position **315**, as discussed above. This teaching is sufficient to place this orientation in the artisan's possession or, at minimum, would have made such an orientation obvious to the skilled artisan.

Allowable Subject Matter

Claims 3-16, 18, 20-26, and 31-33 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher D RoDee whose telephone number is 703 308-2465. The examiner can normally be reached on most weekdays from 6 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703 308-2464. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872-9310 for regular communications and 703 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0661.



CHRISTOPHER RODEE
PRIMARY EXAMINER

cdr
January 17, 2003